

(No Model.)

O. ALLEN.
EXPANSIBLE DRILL.

No. 294,302.

Patented Feb. 26, 1884.

Fig. 1.

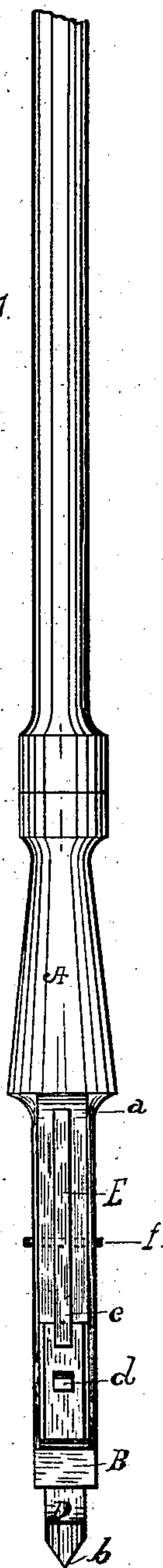


Fig. 2.

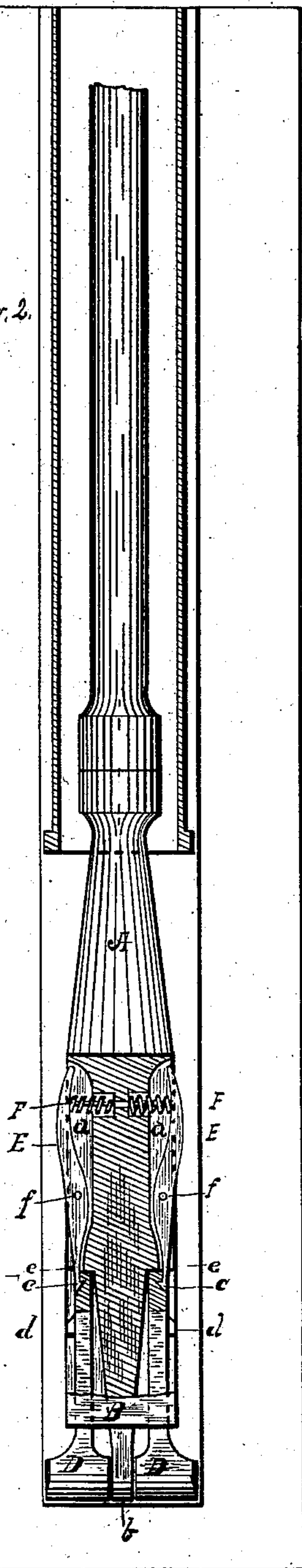
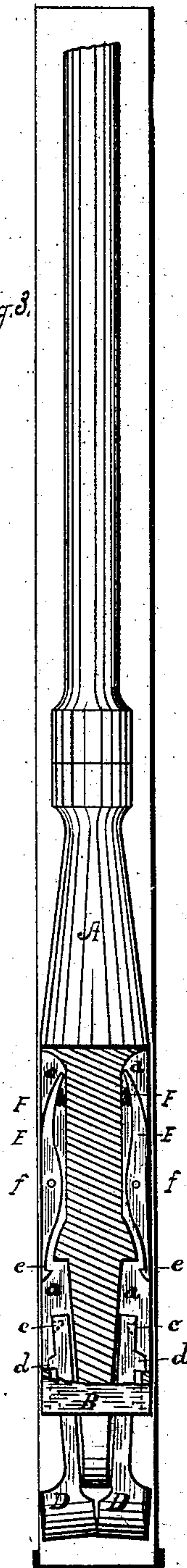


Fig. 3.



Witnesses.

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EXPANSIBLE DRILL.

SPECIFICATION forming part of Letters Patent No. 294,302, dated February 26, 1884.

Application filed January 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, ORREN ALLEN, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Expansible Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in 10 expansible drills, in which the cutting part is made separable and adjustable; and the objects of my improvements are to provide a drilling-tool that can be compressed sufficiently to be lowered into wells through the casing, 15 and expanded sufficiently below the terminus of the casing to drill the well the same size of that containing the casing, which enables operators to bore wells a uniform size through any material that is capable of being penetrated by drills to any desired depth. These 20 objects I attain by means of the device illustrated by the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of the drill; 25 Fig. 2, a side and part sectional view, showing the tool expanded, as in use; Fig. 3, a side and part sectional view compressed, showing the tool in the position assumed while being raised or lowered through the casing.

Similar letters and figures refer to similar parts throughout the several views.

A in the drawings represents the main stem of the drill, having grooves *a a* therein, and having the guard B attached thereto. The 35 lower extremity of the stem A is pointed, as shown in the drawings at *b*.

In the grooves *a a*, and within the guard B, are placed supplemental drills D D, having the projections *d d* thereon, which prevent the supplemental drills dropping below the position 40 shown in Fig. 3, being the position assumed during the process of raising and lowering the tool through the casing. The upper ends of the supplemental drills have notches C made therein, which receive the catches E, 45 which serve the purpose of retaining the drills D D in the position shown in Fig. 2 while in operation. The catches E are pivoted in the grooves *a a* by means of the bolts *f*.

50 To the upper ends of the catches E are at-

tached springs F, as shown in Fig. 2, which hold outward the upper ends of the parts E in such a manner as to retain the catches in contact with the notches C C of the drills D D.

In the use of my invention, the drill, arranged 55 as shown in Fig. 3, is in position to be lowered into the well through the casing, which may extend down within a few feet of the bottom of the bore. When the supplemental drills reach the bottom of the hole, they spread apart 60 at their lower ends, which allows the part *b* of the main stem A to enter between the drills D D, forming a drilling-surface the same width of that part of the well containing the casing. (See Fig. 2.) The catches E engage with the 65 notches C, which retains the supplemental drills D D permanently in that position while the operation of drilling is being carried on. When it becomes necessary to raise the drill out of the well, the drill is raised upward by 70 any suitable means. When the upper ends of the parts E come in contact with the inner circumference of the casing, they are compressed inward, as shown in Fig. 3, which carries outward the catches, releasing the supplemental drills D D, which allows them to 75 drop downward into the position shown in Fig. 3, and which admits of their closing together in such a manner as to be drawn upward through the casing with ease. By this 80 means the impossibility heretofore experienced in continuing wells a uniform size through alternate strata of rock and quicksand or mud is entirely overcome.

Having thus fully described the construction 85 and use of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The hereinbefore-described expansible drill, consisting, substantially, of the stem A, having grooves *a a* made therein, and the guard 90 B, affixed thereto, as set forth, the supplemental drills D D, having extensions *d d* thereon, and provided with notches C, the catches E, and spring F, all operating as described and specified, and for the purpose set forth. 95

2. The stem A, having grooves *a a* therein, and guard B, attached thereto, as specified.

3. The supplemental drills D D, pointed at their lower extremities, and provided with 100 notches C.

4. The catches E, fulcrumed between the sides of the stem A, by which the supplemental drills are sustained in position.

5. In an expansible drill, the combination, with the stem A, having grooves *a a* therein, and the guard B, attached thereto, as set forth, of the supplemental drills D D, as specified and described.

10 6. In an expansible drill, the combination, with the stem A, having grooves *a a* therein, and the guard B, attached thereto, and the supplemental drills D D, of the catches E E and springs F, all operating as described and specified.

7. In an expansible drill, a stem forming a 15 drill, supplemental drills by which the cutting-surface is increased, suitable means of retaining the drills in position to penetrate rock or other materials, and suitable means of retaining the drill in position to be raised and 20 lowered through the casing, as described and specified.

In testimony whereof I affix my signature in presence of two witnesses.

ORREN ALLEN.

Witnesses:

FRANK Q. STUART,
GEO. W. ALLEN.